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INCORPORATION OF SMART CLASSROOM PRACTICES IN INDIAN TEACHER EDUCATION PROGRAMME: AVANT-GARDISM HARNESSING THE POTENTIAL OF ICT IN LEARNING AND PEDAGOGY

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Abstract

There are three age-old buzz words in the field of teacher education viz. Teacher, Student and Education and have at least two alphabets in common i.e. 'E' and 'T'. In the 21st century of technology driven world these two in the joined form (ET) would best stand as abbreviation for the term 'Educational Technology' which is highly related to another term 'Information & Communication Technology' (ICT). The Govt. has started a project entitled NME-ICT to leverage the potential of ICT, in teaching and learning process for the benefit of all learners in Higher Education Institutions in any time anywhere mode. In this era of ICT the concept of SMART classes has emerged as a boon for both teacher and learners. This paper highlights the significance and potential of smart classroom practices in teacher education programmes besides giving valuable suggestions pertaining to the use of same in pedagogy and learning.

Keywords : *Educational Technology, ICT, NME-ICT, Smart classes.*

Introduction: Teacher education is a programme that is related to the development of teacher proficiency and competence which would enable and empower the prospective preceptors to meet the requirements of the profession, with the changing times and thereby face the emerging challenges. The prospective preceptors would be able to live up to the expectations of the nation only when they pursue a sound, flexible, pragmatic and comprehensive teacher education

programme. It is no denying the fact that the wave of Information and Communication Technology (ICT) has taken the world by storm. It has pervaded every nook and corner of the society. ICT has transcended the geographic barriers and has transformed every facet of human life. Education is also no exception to this. It would perhaps be better to write the word ***'education'*** as ***'e-ducation'*** in the current scenario of the technology driven world. Part XXII of the Document of the Plan of Action 1986 (National Education Policy 1986) emphasizes the use of Media and Educational Technology. So does Part XIX of the Document of the Plan of Action 1992. The National Knowledge Commission (2006-09) has also laid stress on creation of a universally accessible ICT portals, web based open educational resources (OERs) etc. But does the current system of teacher education programme in India inculcate the professional competencies required by an individual to function effectively and efficiently as the preceptors? The teacher training programmes in India are being run on the traditional lines without any substantial change or modification to keep pace with the changing realities. The '***SKILL'*** development aspect of the programme is the most neglected one.

Concept of SMART Classroom: A Smart Classroom is one equipped with multimedia components designed to enhance teaching and learning. Although some classrooms may have slight variations, most Smart Classrooms contain the following devices:

Smart Board (Interactive Whiteboard)

Ceiling mounted Digital projector

Laptop Computer

Wireless mouse

Control devices such as switchers and remotes

Wall Screen

Dry Erase whiteboard

V.C.R. and D.V.D. player

Document Camera

Stylus pens (resting in pen tray)

SMART Notebook software

Amplifier and/or classroom speaker

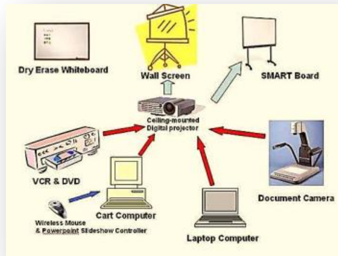


FIGURE 1 : (PICTURE SHOWING THE BASIC ESSENTIALS OF A SMART CLASSROOM)



FIGURE 2: (A GLIMPSE OF THE SMART CLASSROOM)

"Smart school and smart class" is an innovative concept in education. These classrooms are also called **Digital or New-Media classroom**. ICT is the backbone of smart classroom.

Philosophical Rationale: In parlance of educational philosophy, three terms are encountered viz. Metaphysics, Philosophy and Axiology. Out of these branches of philosophy, Epistemology and Metaphysics provide the rationale for the inclusion of smart classroom practices in teacher education programme. Epistemology is the study of our method of acquiring knowledge. It answers the question, *"How do we know?"* It is concerned with how our minds are related to reality, and whether these relationships are valid or invalid. Flaws in epistemology will make it harder to accomplish anything. Methods of teaching and pedagogy are undoubtedly related to Epistemology. As per epistemology of ***Nyaya Darshan,*** there are four means of acquiring knowledge (*Pramanas*) as under:

Perception (Pratyaksha)

Inference (Anumana)

Comparison (Upmana)

Verbal Testimony (Shabd Pramanikta)

Out of these four, two pramanas viz. Perception and Inference have a profound bearing on teaching-learning process. Psychological research has shown that verbal information is in fact better remembered when accompanied by a visual image. What is being emphasized here is that merely delivering lecture or dictating notes on the basics and the use of ICTs without any recourse to smart classroom practice won't do any substantial good. It would be better if direct experience is provided to the teacher-trainees regarding the use of ICT in the form of smart classroom practices i.e. *Learning ICT through ICT should be the key mantra*. *Metaphysics* is the branch of philosophy responsible for the study of existence. It is the foundation of a worldview. It answers the question "What is?" It encompasses everything that exists, as well as the nature of existence itself. It says whether the world is real, or merely an illusion. It is a fundamental view of the world around us. Without an explanation or an interpretation of the world around us, we would be helpless to deal with reality. Any flaw in our view of reality will make it more difficult to live. Metaphysics helps in the formulation of aims of education and curriculum is the means of realization of those aims. The rationale for integration of smart classroom practices in teacher education curriculum lies in the essence of the principles of curriculum construction (*Pragmatist philosophy*) as under:

Principle of utility

Principle of interest

Principle of experience

Principle of integration

Current Scenario in India: The teacher training institutions have adopted *Educational Technology / Technological Foundations of Education* as one of the papers (compulsory/optional) in the teacher education curriculum (B.Ed. / M.Ed.). But it is a matter of regret that only a few emphasize the practical aspect in addition to the theoretical aspect. Most of the institutions do not even take pains to acquaint the pupil-teachers with the effective as well as efficient use of ICT. And a few merely make the students familiar with the basics of Educational Technology only on a half-baked theoretical basis.

Barriers to the use of ICT: Majority of the students admitted in teacher education programme have either half-baked or poor knowledge of ICT. Inclusion of only IT literacy and ICT inputs in various teaching subjects. Availability of electricity and the required technology is also a

problem particularly in practice schools. Some teacher-educators also lack interest in ICT integration and need motivation. Aversion to innovation and anchorage to beaten track. Teacher-educators not well conversant with ICT based skills. Practical use of ICT based skills not being made. Emphasis on theoretical part only. The Society for Information Technology and Teacher Education has identified basic principles for development of effective ICT teacher education (SITE, 2002). These are:

Technology should be infused into the entire teacher education programme: Throughout their teacher education experience, students should learn about and with technology and how to incorporate it into their own teaching. Restricting technology experiences to a single course or to a single area of teacher education, such as methods courses, will not prepare students to be technology-using teachers. Pre-service teacher education students should learn about a wide range of educational technologies across their professional preparation, from introductory and foundation courses to student teaching and professional development experiences.

Technology should be introduced in context: Pre-service students should learn many uses of technology because they are integrated into their coursework and field experiences. They should see their professors and mentor teachers model innovative uses of technology; they should use it in their own learning, and they should explore creative uses of technology in their teaching.

Students should experience innovative technology-supported learning environments in their teacher education programme: Technology can be used to support traditional forms of learning as well as to transform learning. With the view to promoting and motivating quality research in teacher education, the National Council for Teacher Education (NCTE) constituted a Research and Programme Advisory Committee in June 2004. The NCTE's concern is to enable teacher education institutions to prepare a workforce of trained teachers who are fully conversant with the technology. It signed a MoU with INTEL Technology India Pvt. Ltd., Bangalore, on 20th December, 2006, with a view to achieve the objectives of imparting sustained professional development of all teacher-educators from all recognized institutions and making ICT a part of teacher education curriculum. National Mission on Education through Information and Communication Technology(NMEICT) has been envisaged to leverage the potential of ICT, in providing high quality personalized and interactive knowledge modules over the internet/intranet for all the learners in Higher Education Institution in any-time, anywhere mode. It also plans to focus on appropriate pedagogy for e-learning, providing facility of performing experiments

through virtual laboratories, on-line testing and certification, on-line availability of teachers to guide and mentor learners, utilization of Direct to Home(DTH) platforms, training and empowerment of teachers to effectively use the technology integrated methods of teaching etc.

Digital content, animations and videos make lessons rich and interesting. Students understand things easily. Today's need is pooling of learning objects, e-content, open source material on net for free use to teachers and students. However, the use of ICT integration during teaching practice in schools has been a challenge due to low deployment of technology in schools and many other reasons. Basically the teachers/trainers are expected to initiate the use of ICT in their teaching/ training. Hence the teachers must be confident in using ICT in teaching as well as enthusiastic about its use. For this teachers should have the required professional competencies and training. Ministry of Human Resource Development conducts periodic ICT trainings for Teacher-educators in collaboration with INTEL. Till now, 9 Educator Academies have taken place in which, 216 Teacher-educators from Assam, Bihar, Chhattisgarh, Madhya Pradesh, Meghalaya, Sikkim, Uttar Pradesh, Uttarakhand and West Bengal have been trained. For 2014-15, 06 more ICT trainings are scheduled. The Bureau has also made available audio visual material on its wesite www.teindia.nic.in on core issues in teacher education. The Government of India has come up with the National Curriculum Framework for Teacher Education (NCFTE) 2009, which mainly emphasis on the following 5 issues:

Reflective Teaching

Inclusive Education

Constructivist environment

Technology introduction

Teaching for democracy

The scheme has following essentially four components.

Partnership with State Government and Union Territories Administrations for providing computer aided education to Secondary and Higher Secondary Government and Government aided schools.

Establishment of smart schools, which shall be technology demonstrators.

Teacher related interventions, such as provision for engagement of an exclusive teacher, capacity enhancement of all teachers in ICT and a scheme for national ICT award as a means of motivation.

Development of a e-content, mainly through Central Institute of Education Technologies (CIET), six State Institutes of Education Technologies (SIETs) and 5 Regional Institutes of Education (RIEs), as also through outsourcing.

A Few Noteworthy Suggestions:

The teacher-educators should employ smart classroom practices for the under mentioned topics:

Teaching the construction of an Achievement test especially the preparation of Test Blueprint.

Demonstration classes on the essentials of conducting Action research.

Teaching Taxonomy of Instructional objectives (Bloom's Taxonomy).

Demonstrating Micro-teaching skills viz. Demonstration, Demonstration cum explanation, Lesson introduction, Stimulus variation etc.

Teaching the basics and practical use of MS-Office packages viz. MS-Word, MS-PowerPoint, MS-Excel etc.

Teaching Research Methodology.

Teaching topics viz. Item Analysis, Foundation of SPSS Package etc.

Teaching Educational Statistics.

Supplementing requisite topics as proposed in the teacher education curriculum as per the need (making use of images and videos).

Downloading and making use of lecture modules available online at *NPTEL* (*National Programme on Technology Enhanced Learning*) portal

Teaching different styles of writing Bibliography (APA style, MLA style etc.).

Teaching the basics of Curriculum vitae preparation.

Conducting workshops and orientation programmes on apt themes.

Development of Communication skills.

To achieve aforementioned objectives, installation of smart classroom essentials in teacher education institution is a must. This provision should also be extended to the attached demonstration (practice-teaching) schools as per availability of financial resources and ease of administration. The teacher-educators must engage the teacher-trainees in smart classroom practices. If such provision is not feasible in demonstration schools, the teacher-trainees must be engaged in such practices in teacher education institution itself. It is no denying the fact that the class of pupil-teachers comprises a heterogenous blend of them. These students come from varying backgrounds. Most of them are not even aware of the fundamentals of computer, internet

and its usage (in comparison to their fellow mates who are well acquainted with the effective and efficient use of ICTs). This also sometimes leads to inferiority complex in neophytes and slow learners besides widening the Digital Divide. It is here when they undergo pre-service training that a helping hand be lent to them regarding the effective and efficient use of ICT in the form of SMART CLASSROOM practices. The teacher-educators should play the role of a friend, philosopher, supervisor and guide. The technophobics need to be changed into technophilics. *Learning by Doing* (and not rote learning) should be emphasized. The teacher-educators should equip the teacher-trainees (pupil-teachers) with vital ICT based skills by engaging them in praxis cum evaluation sessions. Constructive feedback should be provided as and when needed. Initially the focus should be on processing and not the product (speed ought to follow accuracy). In addition to the conventional style of micro and macro teaching, teacher-trainees must be given an opportunity to teach subject matter (preferably of their own choice) through preparation of lesson plans in the form of PowerPoint presentations (under the guidance and supervision of teachers well conversant with the use of ICTs) to be exercised in simulated micro and macro teaching sessions.Special remedial classes on a regular basis should be conducted for slow-learners and those who are not well equipped with ICT based skills. Such teacher-trainees must be given especial interactive lectures on effective and efficient use of MS-Office packages. The teacher-educators should make use of smart classroom to deliver such lectures (*Learning ICT through ICT*). The essence of Bloom's Taxonomy should be kept in mind while doing so.

Pupil-teachers should be able to demonstrate such skills as:

Preparing PowerPoint slides by making use of essential tools viz. slide transition, animation effects, slide show etc.

Making various types of graphs, charts, tables etc. in MS-Word, MS-Excel etc.

Composing and sending e-mails.

Mastering basic keyboard shortcuts viz. Ctrl+A, Ctrl+C, Ctrl+B, Ctrl+X, Ctrl+I, Ctrl+V, Alt+F4 etc.

Downloading text, images, videos (relevant to the subject to be taught) and making effective and efficient use of the same in smart classroom

Creating, saving, moving, editing and deleting documents.

Accessing National Repository of Open Educational Resources (OERs) to procure requisite contents.

Striking a balance between conventional and innovative modes of teaching.

It would not be an exaggeration to say that even the teacher-educators and in-service teachers are themselves not fully conversant with the use of ICT in the form of SMART CLASSROOM practices. In keeping with the essence of the philosophy of Pragmatism and the changing needs of the society, teacher-educators and in-service teachers have to keep themselves abreast of the knowledge aspect and the effective as well as efficient utilization of ICT. ICTs also provide learners with powerful new tools to represent their knowledge with text, images, graphics, and video. In order to introduce and understand the need of ICT in educational institutions, teachers or students undergoing teacher education must first comprehend and be at ease with ICT. They must be given opportunities for acquisition of new knowledge. This can be made possible by promoting ICT-based training programs introduced in their curriculum. The following can help in this regard:

Orientation programmes

Refresher courses

Seminars

Conferences

Guest lectures

Workshops

It is imperative for teacher-educators and in-service teachers to get trained with the ICTs to enhance their skills to compete with the quality standards of education. Unless the teacher-educators are adept at employing the ICTs in a SMART manner, they would not be able to equip the pupil-teachers with the vital technological skills. **P.C. Wren** aptly remarks, ***"As is the teacher, so are pupils."*** Teacher education institutions may either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological change. For education to reap the full benefits of ICTs in learning, it is essential that pre-service and in-service teachers have basic ICT skills and competencies. Teacher education institutions and programmes must provide the leadership for pre-service and in-service teachers and model the new pedagogies and tools for learning. It may be reiterated here that technological aids can only supplement teaching and learning, they cannot supplant the teacher in any way. What needs to be emphasized here is that a balance has to be struck between the conventional classroom practices and smart classroom practices. The employment of smart classroom practices must find way both

in pedagogy and student learning. The teacher-educators can deliver effective as well as efficient lectures by making use of smart classroom essentials.

Discussion: Owing to the engulfing impact of ICT on every facet of human life and in keeping with the essence of *Digital India Programme*, the Ministry of HRD (Govt. of India) has implemented *National Mission on Education through Information and Communication Technology (NME-ICT)*. Although ICT has been introduced in teacher education curriculum but only a few institutions help teacher-trainees reap the full benefits of ICT in real sense. The ICT in School scheme (introduced in 2004) envisages to set up smart classrooms in Kendriya Vidyalayas and Navodaya Vidyalayas. The significant role ICT can play in school education has also been highlighted in the National Curriculum Framework 2005 (NCF-2005). The National Curriculum Framework for Teacher Education (NCFTE) 2009 also emphasizes the inclusion of technology. As per point 8.2.1 of National Policy on ICT in School Education (2012), teacher-educators will be suitably oriented and trained to use ICT in their pre-service teacher training programmes. They will also be expected to enable pre-service teachers to be sensitized to and practice the use of ICT. As per point 8.2.2 of the same document, all pre-service teacher education programmes will have a compulsory ICT component. The existing curricula for pre-service teacher's training will be revised for including appropriate and relevant applications of ICT. All teacher-trainees passing out of teacher education programmes will obtain adequate levels of competency in ICT and ICT enabled education. This proficiency will gradually form a part of the eligibility criteria for teacher appointments. The Annual Report (2013-14) released by MHRD, Govt. of India too laid stress on the wholesome use of ICT in primary, secondary and higher education in addition to teacher education. As per two-year B.Ed. curriculum released by National Council of Educational Research and Training, the Curriculum components have been visualized in three clusters indicated as *Groups A, B and C*, ending with a 'Final Reporting and Presentation'. Under *Group C (*Section I: Experiences for Teacher Enrichment) use of ICT for Effective Learning has been emphasized. This includes awareness and effective use of ICT as a tool for learning, appreciating the use of audio, audio-visual aids and ICT (Internet and Computer Technology); develop and use teaching aids in the classroom both print and audiovisual material, and ICT (Pedagogy of language viz. English, Urdu, Sanskrit); ICT applications (Pedagogy of Mathematics) Audio-visual aids, CD-ROM, multimedia, internet (Pedagogy of Social sciences). The Section entitled *Enriching Learning through Information and*

Communication Technology (Experience For Teacher Enrichment) intends to enable student-teachers recognize, understand and appreciate ICT as an effective learning tool for learners and an enormous functional support to teachers. For example: Functional knowledge of operating computers–on/off, word processing, use of power point, excel developing PPT slide show for classroom use, use of available software or CDs with LCD projection for subject learning interactions, downloading relevant material.

Conclusion: The teacher training programmes in India are still being run on the traditional lines without any substantial change or modification to keep pace with the changing realities. The fact that ICT has infused a new lease of life in the field of education cannot be denied. Mere documentation would not do. The educational philosophy of Pragmatism is in vogue. ***It is high time when we moved from reflection to action. Chanakya***, the scion of wisdom, is right when he says that learning or knowledge is meant to be exercised or put to practical use. The education or learning is purposeless if it is not put to practical use, a sheer waste. When the effective and efficient use of ICT is being emphasized in schools, why not incorporate the same in teacher education programme in its true sense, worth the name. Why not embrace technology and educate the prospective teachers to empower them with the essential and paying ICT based skills in the form of smart classroom practices. The teacher-educators and the teacher-trainees should equip themselves in using multimedia teaching methods and handling educational aids like laptops, projectors, smart-boards etc. skillfully. The pupil-teachers besides working *for* teacher-educators ought to work *with* them. Teacher training should encompass ICT skills along with a full understanding and complete mastery of ICTs as pedagogical tools. Teacher education institutions should be ensured with financial and human resources with training for successful incorporation of ICTs. ***ICT*** for teacher trainee should not mean '***I*** ***C****an't* ***T****each' in SMART classroom* rather it should mean '***I*** ***C****an* ***T****each'* in SMART classroom. ***I****deate* ***C****reate* ***T****each* should be the pedagogical philosophy of both teacher-educators and teacher-trainees. As for the word SMART, it should expand as – ***S****tudents* (teacher-trainees) ***M****ust* ***A****cquire* ***R****evolutionary* ***T****eachability*. ***E****-learning should mean* ***E****asy-learning,* ***E****ffective-learning,* ***E****fficient-learning,* ***E****mpowered-learning.* ***ET*** besides *Educational Technology* should mean ***E***ffective-***T***eaching, ***E***fficient-***T***eaching, ***E***mpowered-***T***eaching. The teacher-trainees after having pursued the requisite course should feel that they have not just learnt but also earned something valuable. Interest towards the use of smart classroom practices should be kindled in teacher-trainees as

well as teacher-educators (showing aversion). It is rightly said that a spark of interest is fanned into a flame of enthusiasm, with assiduity and sedulity. Barriers be put to end with zest, zeal and collaborative endeavors.

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